LB
1595
.R78

Author

Title

Imprint

16—47372-2 GPO

EDUCATIONAL MONOGRAPHS

PUBLISHED BY THE

NEW YORK COLLEGE FOR THE TRAINING OF TEACHERS

Columbia university. Teacher college

NICHOLAS MURRAY BUTLER, EDITOR

VOL. III. No. 1. { Entered at the Post Office at New York City as second class matter. } WHOLE No. 13.

MANUAL TRAINING

IN THE

PUBLIC SCHOOLS

BY

CHARLES R. RICHARDS

Director of Mechanic Arts Dep't, Pratt Institute, Brooklyn,

AND

HENRY P. O'NEIL

Principal of Grammar School No. 1, New York City.

LIBRARY OF CONGRESS COPYRIGHT DEC 1889 38114

JANUARY, 1890

NEW YORK: 9 UNIVERSITY PLACE

LONDON: THOMAS LAURIE, 28 PATERNOSTER ROW

ISSUED BI-MONTHLY] [$1.00 PER ANNUM

Monograph

LB 1575
.R49

PREFATORY NOTE.

The two papers which follow were prepared for the New York Conference of Educational Workers and read at a quarterly meeting of the Conference held on October 24, 1889. They are now printed in the EDUCATIONAL MONOGRAPHS Series by authority and direction of the Executive Committee of the Conference.

Copyright, 1889,
NEW YORK COLLEGE FOR THE TRAINING OF TEACHERS.

Entered at Stationers' Hall.

What Manual Training Should be Introduced into the Public Schools.

In attempting this paper the writer has been constantly aware of the difficulty of his task. To lay out a scheme of manual work which will fit into the present conditions of our school system; one which will in each stage be perfectly adapted to the development of the pupil and which will, as a whole, be comprehensive and harmonious, is not yet possible. No one can elaborate such a scheme to-day; it will only be after years of experiment that the possibilities of these new methods will be developed and the different elements fitted and smoothed into place. It is difficult, in fact impossible, for one person to speak with authority on the exact relations of the various means which have been employed, for while well-adapted courses have been developed in many of the school grades, in no single instance have all these most approved and most thoroughly tested methods been united into a complete system. Nor has it been possible for any single person to come in actual working contact with all of these methods, and it is only from those in such close contact, from the workers, that a natural and harmonious system of manual training can come. This paper, consequently, is offered more in the hope that it may serve as a basis of discussion, leading to the improvement of its suggestions, than for the ultimate good it may contain. Although the full benefit of manual training is only realized when its spirit

enters into all the exercises of the school-room and finds expression in them all, this paper will not attempt to deal with the new methods introduced into the study of language, number and geography, but will confine itself to the more special occupations of hand-work.

Taking a view of the entire system of what may be called popular education, from the kindergarten through the high school, we find in the two extremes of the scale the problem of manual training to a great extent solved, with methods fairly defined and tested by years of practice ; but in the middle period, that of the primary and grammer schools, we are compelled to admit that the problem is still in the experimental stage. But assuredly, if the new methods are to affect broadly the educational work of the country it is here that they must be developed and perfected. It is undeniable that much of the present vagueness of system and lack of uniformity in the work attempted in the primary and grammar grades comes from the fact that the problem of this work was attempted after the kindergarten and manual training methods had become prominent. There has been from the first a tendency to draw methods up from below and down from above, rather than to meet the needs of each stage from a study of its own conditions. The exercises of the kindergarten have been used in the primary grades and the work of the manual training school attempted in the upper classes of the grammar school. This violation of the first principle of pedagogy, adaptation of method to the intellectual calibre of the pupil, has doubtless hindered the development of hand-work courses suited to the primary and grammar grades.

Leaving aside then the work of the kindergarten, which has had the advantage of so many years of study and the labor of so many workers, we may consider the first year of the primary grades. Here the work must be of the simplest character. There can be very little application of

thought on the part of the pupil, for as yet there is very little thought-power developed in him. The first stages must deal with observation; expression must come later. The elementary ideas of form should be gained by actual experience and study of objects, after which the simplest means of expression may be cultivated. First of all, then, the simplest type forms (sphere, cube and cylinder) are to be studied, and for this purpose solids, wholes not parts, should be used: They are to be studied not by sight alone, but by touch, by handling, and their nature brought out by questions and experiment until a true idea of the elementary properties of the forms is gained. From this as a basis the exercises may lead to the simplest forms of expression; first, of the idea of the whole, for that is the simplest. For this purpose clay, wax or putty may be used, but experience seems to point to clay as best suited to class room work. In this material, by working with the fingers and hands, the solids can be imitated and the impressions already gained, sharpened and corrected. Later, slips of paper cut into squares and other forms may be compared with the faces of the objects. These slips when folded symmetrically produce other forms, like faces of other solids and by this means an unconscious analysis of the form is made and a further idea gained of its properties. This folding across center lines may be carried much farther, and scissor- or knife-cuts made along the creases and the resulting pieces studied and arranged about centres as simple designs. Still handling the models the attention may be carried to the edges and after running the fingers over these and imitating the outlines in the air the first attempts at drawing may be made. It will be expression of the simplest kind, a record, as far as the child is able to make it, of the image formed in its own mind by the handling and study of the models and the endeavor should be to make this expression as free and genuine as possible.

In this first primary year, then, there has been an attempt to develop in the child's mind the elementary ideas of form by handling and experiment, and then to deepen and sharpen those impressions by reproducing the ideas in clay, paper and lines.

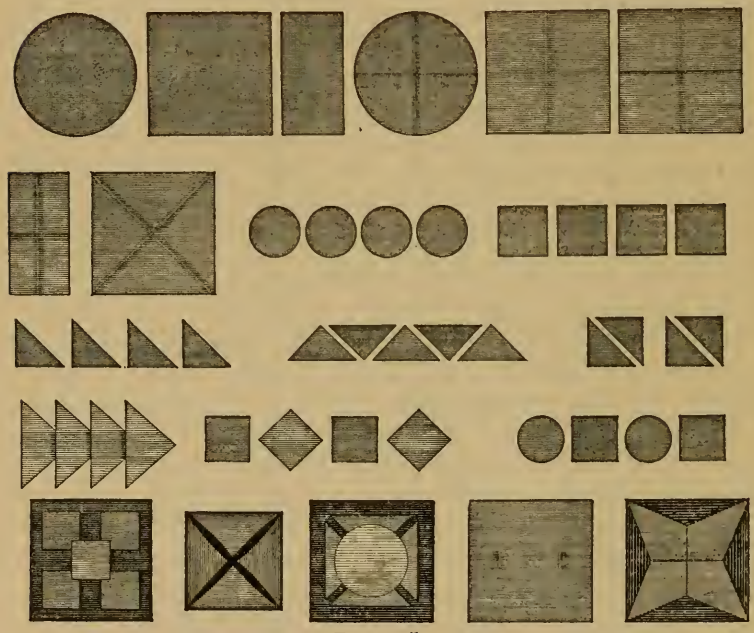

PLATE I.

This plate represents the character of the first year paper work. The pieces in the left hand upper corner showing forms in which paper is given, following which are simple folds and forms resulting from cuts along the folds.

The study and handling of the models should continue in the second primary year. Here a few other forms (cone, square pyramid, triangular prism, etc.) may be introduced and their making in clay carried out in the manner of the first year. Besides these type forms, examples of them in familiar objects, may be compared and made. In the paper work of this grade the practice in drawing may be made use of; lines on the squares of paper may take the place of folds. These lines at first would be much like the folds, following the diameters and diagonals; but afterwards, by the use of simple curves and freer lines, there would be secured at once a greater range of expression and an opportunity to carry the simple design arrangements much further. These design arrangements after being made from the paper folds and cuttings, may be drawn on manila paper. Besides the line work just spoken of, the drawing may deal with the faces and to some extent with the appearance of the models.

In the third primary year the remaining type forms may be added and their study continued. The clay work may here reach beyond the mere imitation of these forms to the modeling of natural forms and simple casts. The paper work will be freer from the use of curved lines, and the drawing, besides picturing the appearance of the different solids alone and combined, may take up the elementary ideas of the working drawing and the arrangement and relation of the different views of the simple solids.

The subject of color instruction is in too undeveloped a state to attempt to lay out a comprehensive scheme for it, but, as will be readily seen, in the arrangement of paper forms into designs an opportunity is offered, by employing differently colored papers, to bring out the relations of the colors and their proper values; but great care should be taken that the combinations always express unity and harmony and never display strong contrasts.

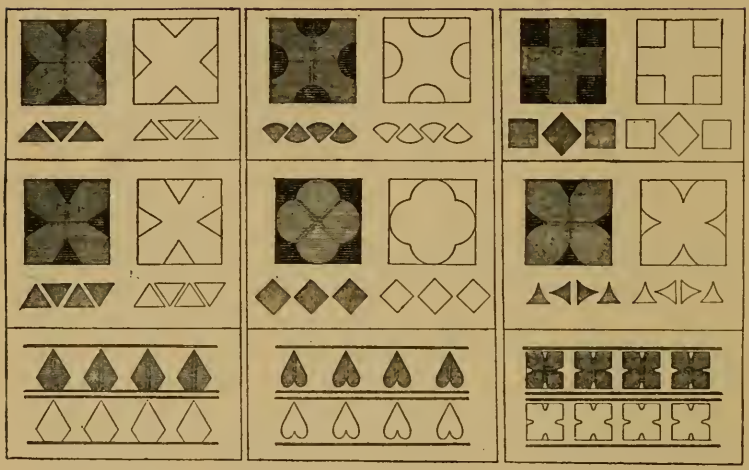

PLATE II.

In this plate are shown specimens of second and third primary year paper work, the drawing in each case accompanying the piece. The exercises given are simply indicative of the nature of the work and do not by any means represent its scope.

In the beginnings of the grammar school work, when the pupils have reached the average age of eleven years, the methods used may change somewhat in character. The handling of the solids in the manner of the primary years is left behind, the usefulness of clay modeling purely for purposes of geometric form-study is, in a great measure, outgrown and if used beyond this point it should be solely on artistic grounds. Paper folding and cutting in the flat no longer meet the pupil's needs, but another kind of paper work may here begin, the operations of which are of the utmost value. This is the making of geometrical forms out of thick paper or cardboard. Here, too, the use of simple instruments may well commence. In the primary grades, before the pupils' appreciation of accuracy has been sufficiently quickened to derive benefit from their use, instruments have not been employed. There the object sought is rather clearness of thought and freedom of execution, but now that some notions of the different forms and their properties have been obtained, the occupations may seek to express them with all the accuracy possible. The only instruments needed at first will be the rule, two small triangles, and later a very simple form of pencil compass. Although in all the work of the previous grades, in the handling of models, comparing of faces and folding of paper, the pupils have been studying the properties of form, which is simply pure geometry, they now approach the subject in its more exact relations. And here it seems as if the scope and power of these methods can hardly be over-estimated. The subject of geometry, the science of form, instead of being left to the higher schools as a dreaded logical study, is here learned in the doing and making. The cold statement of laws and propositions becomes invested with meaning and life when brought into the actual experience of the pupil, and when their expression in the material world about them is made clear. The elements of this kind of work have

been often used and are well suited to the needs of the first grammar year, but the possibilities have certainly not yet been reached, and the writer has little doubt that this occupation could be carried on with great value, not only as dictation work, but in the form of problems, throughout all the grammar grades. The exercises can be carried to almost any extent. After making the type forms singly, their combinations may be studied; as, for example, after a simple cylinder the intersection of two cylinders in an angle joint may be taken up, so touching on the principles of sheet metal work and the basis of many operations practiced in the arts.

The drawing which has now ceased to be merely an expression of simple form-study, must be carried on beyond this point as a special subject and will not be dealt with further in this paper, except to point out that whatever may be the nature of the work, representation, construction or decoration, it only attains its greatest value as the expression of an idea, and unless this idea is grasped by the pupil,—in other words, is his own idea,—the work is merely imitative and destitute of educational results.

This work of the first grammar year may, of course, be carried on in the regular class room, and this must be the character of the greater part if not of all the work attempted in the grammar grades. Separate laboratories, to accomodate the large numbers of the many grades, would be practically impossible in our large city schools. But besides this, there is another and still stronger reason why it is desirable to carry on this work in the regular class-room and under the direction of the regular teacher, as far as possible: it is that these exercises, to have their greatest value, must be followed as part of the regular school work, they must harmonize with all the other exercises and react upon them. This can be much better accomplished by the teacher, whose influence over the

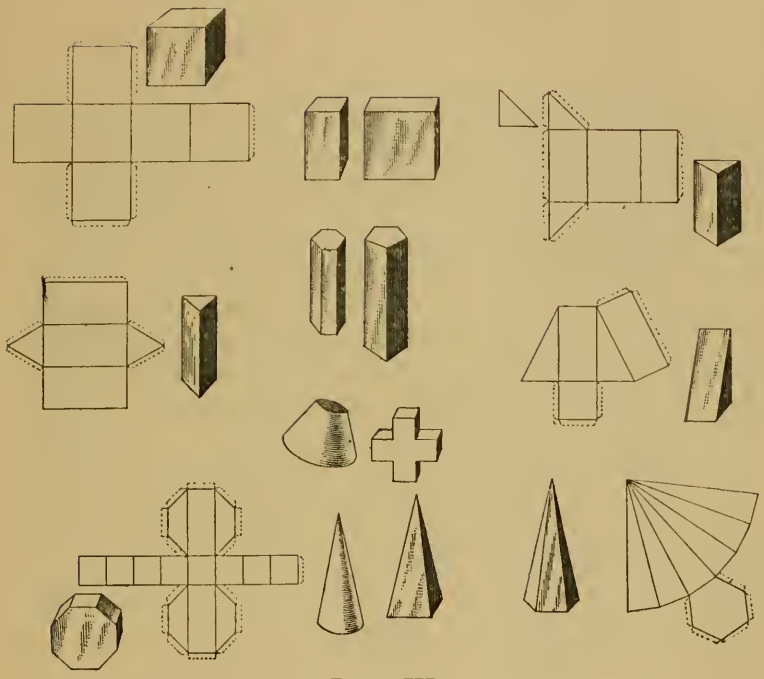

PLATE III.

This plate shows a few built up type forms with and without their patterns. The exercises possible are of course almost endless and applicable to very different grades of pupils.

class has been acquired by daily contact, than by separate instructors and among different surroundings. It would however undoubtedly be best to provide for the supervison of such work by competent experts, for some time to come.

It is in view of these facts that many experiments have lately been made towards developing a very simple kind of wood-work which can be done on boards placed on the regular school desks and which will lead on from the cardboard work of the first year of the grammar school and prepare for the joinery work of the later grades. In these experiments the thought has been that by employing very thin strips of wood which represent, practically, but two dimensions, simple combinations might be made and the first ideas of wood joints obtained without the difficulty of securing a fit throughout a considerable thickness. The tools needed in this work would be the same as in the cardboard work, with the addition of a small chisel or knife and hammer. The material can be obtained readily in strips and divided up for class use by running knife cuts across and breaking, so as to leave an irregular edge. Marking off and cutting with the chisel can then be performed on the lower part of the board, after which the pieces can be tacked in position and tested with the triangles on the upper part of the board. A certain portion of the pupil's work can be kept in this position for inspection and readily removed by lifting the pins.

Beyond this, in the third year, simple exercises with wood in the solid may be taken up and at this stage the Swedish Sloyd work offers many suggestions. It is hardly possible, nor is it desirable to use the exact exercises as employed in Sweden ;—many of the models have no significance in American eyes and are not adapted to American tools. The methods of instruction must also be modified considerably; class methods of instruction must be adopted, in place of individual teaching, and

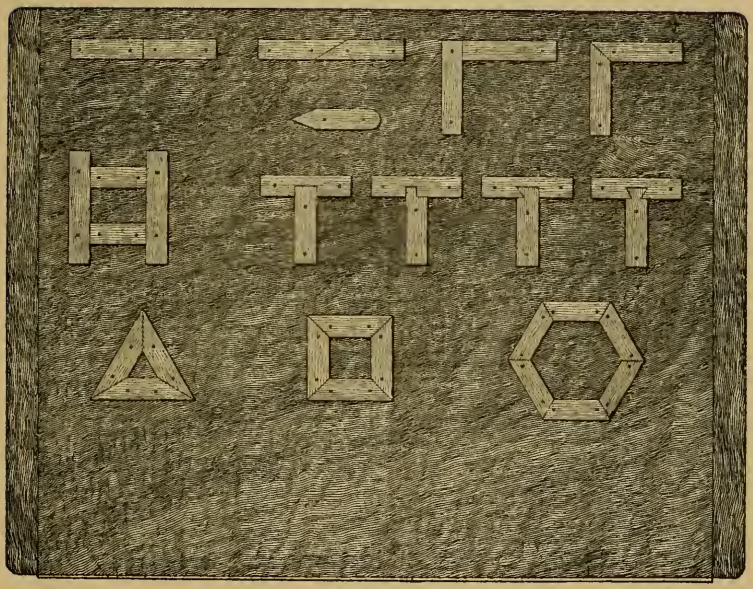

PLATE IV.

This cut gives some idea of the nature of the slip work. The pieces used are one inch wide and one-sixteenth or one-eighth inch thick. Basswood, whitewood and white pine are suitable woods, and the cutting may be performed by either a light and short paring chisel or a special knife with a straight slanting cutting edge at the end. The small strip at the bottom of the board is used to place the slip and triangle against when marking off.

the use of drawings and exact measurement introduced. It is not the copying of the exercises of Sloyd that will be helpful, but the study of some of its underlying principles, viz.: the simplicity of the first operations, the few tools required, the freehand character of the work and the economy of material—all of which tend to meet the necessities of the school room. These principles are admirably carried out in the earliest Sloyd work, and it is this work which offers the most fruitful suggestions for the solution of the present problem. The work which requires only the knife, chisel and laying-out tools, and leaves out the planes and saws can be carried on in the regular class room, by special teacher, perhaps, with but little cost for equipment. This matter is dwelt upon with emphasis because it is believed that any methods involving considerable cost of equipment and separate laboratories, however satisfactory in the results, do not meet, but distinctly avoid this public school problem of lower grade work.

There is one principle of Sloyd which is hardly consistent with the best results in class work, and that is the making of each exercise a completely finished article. Those articles which serve a useful end generally represent a repetition of a few operations and their construction involves a large amount of time without corresponding return. If a tool is to be used for the first time upon a constructive piece, there is very little chance of the work being satisfactorily finished in the first attempt, and the operation has to be repeated many times with much consequent waste before a successful issue is reached. It is here that the advantages of the Russian system, in which each exercise represents a single principle or method, are strongly apparent. By this system the practice necessary to the command of the tool is gained and the knowledge of methods acquired with the least consumption of time and material, before actual constructive work is taken up; and it is, without doubt, this principle

that must guide whatever is done in the higher grammar grades in the work that approaches the actual processes of the shop. But even here too much must not be attempted.

Although the principle is everywhere accepted and emphatically repeated that the school must not attempt special instruction, must not do trade work yet almost every attempt at introducing the work into the schools is greatly influenced by the conventional practice of the carpenter's trade. His tools are copied, generally in their full number and of their full size. But this is not necessary. This problem of school work should be met on its own conditions, not on the conditions of the carpenter's trade. Certain of the carpenter's tools, the planes and large saws, are awkward and difficult for boys under fourteen to handle. Others are easily handled and admirably suited to the needs of school work and with these tools everything desirable can be accomplished. With the chisel, back-saw, and laying-out tools, the whole field of joinery work can be covered. The saving in expense is also a very important item, as by leaving out the planes and large saws, the cost of tools for each boy is reduced one-half.

As has before been emphasized the nature of the work must be suited to the age and development of the pupils dealt with. When the manual training schools were first inaugurated the shop-courses imitated those of the engineering schools, but experience soon showed that the different conditions needed different means, and courses of work have since been developed, better fitted to their special needs. And now the work attempted in the grammar school grades runs a similar risk in copying too closely the work of the Manual Training School. But what is fit for the engineering school is not necessarily fit for the manual training school, and what is fit for the manual training school is not necessarily fit for the grammar school grades. Little can be done here in actual

construction, but much may be accomplished in exercises which, simple in themselves, develop in a high degree care and forethought and an appreciation of accuracy.

The work of the Manual Training High School, now so fairly developed, can here be only mentioned. In the system commonly adopted each year has its special work. In the first year the woodwork develops exact judgment and keenness of observation; the blacksmith work of the second year gives quickness and decision; and in the last year the metal work brings out strongly the appreciation of exact accurate work and gives a mastery of mechanical principles. Here the necessity for perfect comprehension of each thing dealt with holds as strongly as in the lower grade work, and acquires a wider meaning. Woods must be studied as to their nature and laws of growth, their distribution, preparation for market and commercial form. The action of tools must be analyzed and the underlying principles be clearly set forth; the metals must be treated in the same manner, their production explained and their strength and other properties studied. This analytical matter which is only now being properly developed, is an integral part of any course dealing with the operations of tools in wood and metal and any scheme which neglects it can achieve but partial and one-sided results.

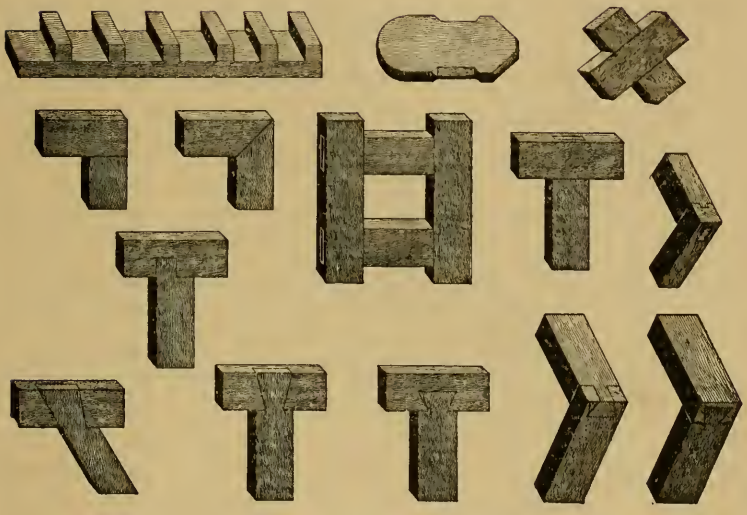

PLATE V.

The fourth year grammar work is shown here. The field of simple joinery being fairly covered without the necessity of the large saws or the planes.

APPENDIX.

The suggestions of this paper relating to the primary and grammar grades have been summarized in the following scheme :—

PRIMARY

- First Year—Handling and study of models, clay modeling, paper folding and drawing.
- Second Year—Handling and study of models, clay modeling, paper line work and folding, drawing.
- Third Year—Study of models, clay modeling of natural forms and simple casts, paper design, drawing.

GRAMMAR

- First Year—Making of geometric solids in paper, drawing.
- Second Year—Slip work in wood, drawing.
- Third Year—Exercises based on Sloyd, drawing.
- Fourth Year—Elements of joinery, drawing.

Manual Training as Introduced into the New York Public Schools.

Under the instruction of our Executive Committee, the special portion of this day's subject assigned to this paper is—"a discussion of the subject from the standpoint of the present curriculum, pointing out how the innovation may be made without undue sacrifice of anything of value that is now taught. Practical questions like those of time, ways and means, teaching-force, etc., should receive special treatment."

Permit me to begin by indicating as clearly as I can what we in the public schools of this city understand as included under the unfortunate title "Manual Training." I have no intention, however, of attempting the dangerous task of endeavoring to give a condensed definition. That some necessity for such a definition does exist, at least sufficient to justify me in thus consuming a portion of my allotted time, may be gathered from the fact that even in the prescribed divisions for our own Standing Committee work, we find an apparently implied distinction drawn between,—(1) Kindergarten, (2) Form-study and Drawing, (3) Usual School Work, and (4) Manual Training.

Now, first, we in the public schools of this city include, as a matter of course, under Manual Training, form-study and drawing; secondly, we agree perfectly with Dr. Woodward's statement in one of his many admirable addresses, that "The manual education which begins in the Kindergarten before the children are able to read a word should never cease;" thirdly, in all our school work, usual and unusual, we call that method best which proceeds upon the basis of the study of things, not words

merely. It is object-teaching applied to our methods of instruction in all those subjects of our curriculum to which the invention and ingenuity of the thoroughly trained and enthusiastic teacher can apply such methods,—the only limitation in the application being the extent of the teacher's inventive faculty. We regard Manual Training, not as a new subject,—an innovation to displace other older subjects, but as a system of methods and devices in teaching, which take into account the paramount importance of addressing the mind of the child through the avenues of all his sense-organs, laying particular stress upon the use, hitherto much neglected, of the sense of touch and the muscular sense. We regard the mere manual training, or training of the hand, as purely incidental, though immensely valuable.

Correct methods of teaching under this system must necessarily lead to facility in the use of the hand, but the mere facility is not aimed at as our ultimate object. Indeed when facility comes to such an extent, in any particular exercise, that the hand of the child begins to do the work so readily as to indicate that the best concentration of his thought is not demanded, we consider that the signal for an immediate change of exercise to the doing or making or handling, involved in some other tangible illustration, which will demand his full thought. We aim constantly at the production of thought-power in the child, with incidental hand-training, with incidental eye and ear training; in short, with incidental sense-training. Our own division of our committee-work, in this Association, would seem to give force to the statement that shop-work, or working in wood or metal, constitutes the sum and substance of manual training even in the minds of some of its best advocates.

Just here it is appropriate to say that in the present movement in our New York City Board of Education, which has for its object the extension of the introduction,

within a few months (probably in the early part of next year), of manual training methods into all the public schools of the city, both the Special Committee of Eight and the Standing Committee on Course of Study of that body, are substantially agreed on the omission of the workshop, or working in wood as a necessary factor,—leaving to future development its gradual introduction. They will thus avoid, and I think wisely, the misconstruction that seems inevitable in some minds, that trade-teaching, or mere training in the use of trade tools is intended. They thus avoid, as well, the heavy initial outlay specially involved in the plant of workshop and kitchen, and silence somewhat the usual outcry of those taxpayers who deem the cost of an improvement a proper objection to any progress looking towards the future welfare of the children. At the same time, under the plans proposed, the class teacher will be forced to prepare to do her work in all the subjects without the aid, while in presence of her class, of specialists.

In a paper limited in time to twenty or twenty-five minutes it would be impossible to discuss in detail all the changes in time, ways and means, teaching-force, etc., which have attended the introduction, since February 1, 1888, of Manual Training into about twenty-five departments of the school system of this City. A reading and comparison of the Teachers' Manual of 1884, which now governs the work in the great majority of our schools, and the Manual-Training Course of Study of 1888, which was compiled for the special use of the schools above alluded to, must be advised to those who desire full and accurate information. In this paper only a glance can be given towards some illustrations of the changes made and the ways and means adopted.

In the Primary departments (age of pupil from five to about 9½ years) :—

Development of conceptions of form through seeing objects, handling objects, clay-modeling, stick-laying, etc.

Representation of conceptions of objects by clay-modeling, paper folding, paper cutting and drawing.

Important memorandum :—"The child is not to be told what to see. He is told what to do with an object as a means of inducing him to discover some form or quality of it which ought to receive his careful attention; but he should never be told something to be memorized and recited about the object." With this general statement the detail follows, including :—

Study of the sphere, cube, cylinder, square prism, hemisphere, triangular prism, cone and vase-forms, and the surfaces, angles, lines, etc., involved. Handling the solids studied, modeling their forms and derived forms in clay, construction in paper, etc., etc., used in all this.

The outline of this primary work can be found in greater detail from page 15 to page 43 of the Manual of 1888, referred to above. The time allotted, in so far as a possible dissection as to time can be made (and it is only made here to meet the minds of those who contemplate "manual-training subjects" as separate and apart from "other" subjects in the curriculum), will be found to be about 300 minutes per week in each of the primary grades.

In the third primary grade (age of pupil from about 7 to 8 years) female pupils begin sewing, which is thence carried through all the remaining primary grades into and through the five lower grades (age of pupil from about 9½ to 12½ years) of the Female Grammar Departments, stopping where cooking begins.

Geography in the primary grades is begun in the highest grade (age of pupil from about 8 to 9½ years); modeling in clay or sand the natural forms of land (islands, etc.), with attendant drawing is constantly used as a means of teaching. In the opinion of the writer of this paper the study of the subject could be begun, granting proper methods of presentation, with the pupil's first entrance into school (age 5 years).

In all the grammar grades (age of pupil from about 9½ to 14+years) mechanical drawing is taught to both boys and girls. This includes a knowledge of the use of the ruler, triangles, square, compasses, scale, protractor, india-ink pens, etc.

Geometry in the six lower grammar grades (age of pupil from about 9½ to 12½ years) is taught by means of graphic solutions, with attendant proofs by superposition, to both boys and girls. In the highest grade plane geometry, taught by means of the logical method, supplements the former method. Throughout all the work the construction of all the regular solids in paper from single sheets, with drawings of methods of construction in "the flat," is relied upon as our (to the pupil as well as the teacher) most delightful stimulant to independent thought. All the prisms, all the pryamids and their frusta, prisms and pyramids, in the higher grades, being readily cut by the pupils at varying angles with the line of altitude, are made from single sheets of paper. No one who has not seen the every-day work can understand the wonderful invention evidenced by even the youngest pupils in this work and the intense delight they show in doing it. Woven throughout all the geometrical work is the practice of what has been aptly termed "inventional geometry."

Workshop practice is given in all of the five higher grammar grades for boys (age of pupil from about 10½ to 14+years), involving preparatory working-sketches and working-drawings to scale.

Cooking, or, rather, the physiology, hygiene, philosophy and chemistry underlying cookery, with their practical illustrations, is taught to the girls of the third and second grammar grades. Thus the sewing and cooking, taken together, balance, so to speak, the workshop practice of the five grammar grades for boys.

In all the grammar grades modeling and map-drawing

are continued as methods in geography and historical geography; and modeling as a means of form-study, for its help towards drawing and art-study, is constantly practiced.

Now, as to time:—

The minima in grammar grades are as follows:—

Language Lessons, 4½ hours per week;
Arithmetic, 1st to 5th grades, 2½ hours;
Arithmetic, 6th to 8th grades, 3 hours;
Penmanship (or its application), 2 hours;
Geography, 3rd to 5th grades, 1 hour;
Geography, 6th to 8th grades, 1½ hours;
Shopwork, 1st to 5th grades (boys), 2 hours;
Sewing, 4th to 8th grades (girls), 1 hour;
Cooking, 3rd to 2nd grades (girls), 1 hour.

The remaining time to be arranged at the discretion of the Principal. A slight examination of the margin allowed will show the great scope permitted as a relief from a machine Schedule.

I must again refer to the Manual of 1884. Some of the changes, besides those already indicated, made to meet the new work are:—

In the primary grades the amount of geography, principally political, previously taught has been materially reduced, and the text-book, for home-lesson purposes, eliminated.

In arithmetic, long division was cut out and sent to the grammar course. In the grammar grades in geography text-books (for memorizing home-lessons) were excluded from the lower grades (8th, 7th and 6th). History (5th to 2nd grades) is now taught by intelligently reading the subject in class, in constant connection with its incidental geography; the time for this "supplementary reading" being that formerly given to reading from a special "class reader." In the same way supplementary reading in geography and science is given where set class readers were formerly used.

A word remains to be said as to the way of managing the five workshop-grades, so as to give each boy two hours per week without trenching too much upon regular class work in other directions. Here the size of the room selected and the resulting number of work-benches came into play as important factors. My workshop, for instance, permits only 13 boys to receive instruction at one and the same time. In schools selected for manual training since February 1st, 1888, having more favorable conditions, I understand that the facilities are such as to accommodate a much greater number. It is evident that, in my school, all the work in these five grades, other than that done in the workshop, had to be so arranged as to suit multiples of 13;—a class of 39 pupils giving, for instance, three workshop-divisions, one of 52 pupils giving four workshop-divisions, etc., etc. This at first view, to those in the rut of the old methods of class-instruction for class-results, seemed to be a problem incapable of solution. What was the class teacher to do with those pupils remaining in her classroom in the absence of the workshop-division? Well, I can only say that we have found this apparent difficulty a blessing to the individual pupil. It has forced the class teacher to so study the individual necessities of her pupils as to best utilize their time as individuals. While the workshop-division is away, the weaknesses of the other pupils in varying directions are attended to. As a rule no uniform class-work is attempted during these separations. "Picking up loose threads" with individuals, as they may need special help, is what the teacher aims at. Some may be modeling, either for its application to geography or to form-study and drawing; others, in making preparatory sketches or working-drawings for their own workshop exercises; others, in finishing satisfactorily previously incomplete, or imperfectly accomplished, work in any direction that the teacher deems advisable. While

this condition of affairs demands from the teacher a deeper study of her pupils as individuals, and better and more rapid judgment,—what may by some teachers be called "harder work,"—yet we have found that these very features make what at first seemed a disagreeable necessity a boon to the children. Let me here say in justice to my own faithful teachers, that they, too, fully appreciate the return they obtain from willing pupils, and are fully repaid by the evidently real progress made in ability to think.

A few words need to be said as to extra working-force in the corps of teachers. My judgment is that, with the exception of the present apparent necessity for a specialist in the "Workshop" and "Kitchen," there is no necessity, in so far as the introduction of manual training anywhere in the system is concerned, for special teachers:—and with proper training in the future on the part of every class teacher, even these specialists may, in time, become unnecessary.

Before leaving this portion of my subject I deem it my duty to place upon record, in so far as I can with the opportunity now afforded me, my appreciation of the labors, not as yet fully and generally recognized, of one to whom more than to any one else belongs the credit of the new departure in the public schools of this City. During the year 1887, Mr. Thomas F. Harrison, then Assistant Superintendent of Schools, was assigned during four months, by action of the Board of Education, to the task of examining in many cities the development of this whole subject; and of formulating, after consultation with the full Board of Superintendents, headed by City Superintendent Jasper, a scheme for its wise introduction, without damaging shock to what was already good in our vast system, into our school work in this City. The Manual Training Course of Study of 1888, to which I have alluded, was the result,—and upon it has been built all that I have

described. After nearly a half-century of faithful work in this City, Mr. Harrison, on leaving the profession by his resignation of the position he had so long filled with honor to himself and profit to every teacher with whom he came officially in contact, could have left no more enduring monument of his foresight and genius than this work of inspiration. To him, more than to any other single individual, is to be attributed the fact that the new education has been grafted upon the public school work accomplished in this City with pupils ranging from five to fourteen years of age. And this is true at present, let it be remembered, only of the schools of the City of New York.

I should feel that I had not done justice to the subject in hand did I not, before closing this paper, devote some words to what I deem to be the solution of the problem of the proper introduction of Manual Training into all the Public Schools of this City. The efforts of all interested in bestowing upon the children of this City the great boon of the introduction of the new education should be bent persistently towards inducing the establishment, by the Board of Education, of a Saturday Normal School. If within a few months, as now seems most likely, these methods are to be introduced into all the schools, it is evident that over 3000 teachers will be, almost immediately, brought face to face with the necessity of obtaining, in some way, a knowledge of how to properly present them to children. These teachers, most of whom have either no conception or a false conception of what Manual Training means, must first be instructed themselves, or the inevitable result will be a miserable failure. The pressing and immediate necessity is the Saturday Normal School. To this school should be invited to serve as Professors the best specialists in the several directions involved, whether they be procurable in our own midst or from elsewhere. The only tests in the selection of these specialists should be their pre-eminent

ability, in the light of the new departure, first, to clearly present the pedagogic principles underlying the teaching of their respective specialties; secondly, to illustrate correct methods of presentation to the children, in the day-by-day sequence of the prescribed work in the several grades; and, thirdly, the further ability to present to the teachers correct devices tested by experience or comformable to methods based on approved pedagogic principles. Let such experts be welcomed, coming from no matter where, let them strive to vividly impress their spirit upon our teachers, and thus indirectly upon the future welfare of the children; and finally, let the only test of their professorial continuance in such an institution be the survival of the fittest. Any principal of a Manual Training School who has, during the past year, been endeavoring to "spread the light" among hundreds of inquiring visitors, will bear me out in stating that an almost dense ignorance of the subject characterizes even the professional teachers among these visitors, and that very few could digest what they saw and heard. When teachers will, on entering, begin by informing you "that they have only fifteen minutes to afford to the examination of the subject, and would like to see your Manual Training as quickly as possible," it is easy to understand how ineffectual have been the efforts of those who have written volumes for the instruction of professional brothers and sisters. Mr. H. H. Boyesen, in a recent article upon a totally different subject written for the *Forum*, tells a story of his experience in this country, which is so apropos that I may be pardoned for reproducing it here. He writes that, once having had the honor of waltzing with "an aspiring young lady," and "while they were whirling in the dizzy mazes," she said to him, "Now, won't you be kind enough to give me just in a few words the gist of Spinoza's 'Ethics?'" One would almost imagine that the anxious, but hurried, inquirer into the subject of Manual Training expected to see something

like a "dime museum freak" trotted out from its cage on call. With such, patience ceases to be a virtue.

In proposing the establishment of a Saturday Normal School I am voicing the sentiments and desires of the great majority of the teachers in this City, who are only too anxious to do intelligently and well all that may be demanded of them, but who need light upon this subject. And, that I may not be misunderstood, let me say that the establishment of a permanent Normal School, such as I advocate, does not, in the slightest way, involve an arraignment of any college or school devoted to the preparation of persons desirous of entering upon the profession of teaching. I am advocating the continuous professional training of those now actually teaching ;—in my opinion, a necessary supplement to the very valuable previous work, mainly theoretical, done in such colleges. I am advocating a Post-Graduate Normal School for the benefit of those who feel the necessity, while handling classes and while, if they be faithful, studying closely the workings of the child-mind, of coming for consultation, advice and inspiration, at least once a week, to experts in the many directions covered by our curriculum.

Theoretical training before entering the profession, and the further, deeper and more difficult and serious study, after having become responsible for the future well-being of human lives and souls, are two totally distinct things. We need both in the City of New York, that it may keep its place in the van of progressive teaching. I believe we have in the public schools of this City,—no matter what may be flippantly said of exceptions to the rule,—a body of the most faithful, intelligent and painstaking teachers to be found anywhere on this continent. Give them the opportunity I advocate, and they will rise to the demands of the new education so gladly and so enthusiastically as to satisfy the highest known standards of professional excellence.

MANUAL TRAINING IN SCHOOLS.

EXERCISES IN WOOD-WORKING.

With a short treatise on wood. Written for Manual Training classes in schools and colleges. By IVIN SICKELS, A.M., M.D. (Ready in December, 1889.)

EUROPEAN SCHOOLS;

Or, What I saw in the Schools of Germany, France, Austria and Switzerland. By L. R. KLEMM, PH.D., Principal of the Cincinnati Technical School, author of "Chips from a Teacher's Workshop," etc. INTERNATIONAL EDUCATION SERIES, Vol. XII. Edited by WM. T. HARRIS, LL.D., Commissioner of Education. Fully Illustrated. Price $2.

EDUCATION IN ITS RELATION TO MANUAL INDUSTRY. By ARTHUR MACARTHUR, LL.D.

The important subject of manual education is thoroughly and clearly treated. It will enable the teacher to get an intelligent view of this branch of instruction, which is now receiving much attention. It is eminently a book for the times. Price, $1.50.

KRUSIS DRAWING.

Freehand, Inventive, Industrial. A successful and practical system of drawing adapted to the requirements of all grades of schools.

THE SERIES—

Synthetic Series, *Analytic Series*,
Perspective Series, *Supplementary Series*,
Industrial Series.

Send for free Descriptive Circulars, Catalogue and Price List.

D. APPLETON & CO., Publishers,

1, 3, 5 BOND STREET, NEW YORK.

WOMAN'S EXCHANGE.

TEACHERS' BUREAU (For both Sexes).

Supplies Professors, Teachers, Governesses, Musicians, etc., to Colleges, Schools, Families and Churches, also Bookkeepers, Stenographers, Copyists and Cashiers to Business Firms. Recommends Schools to parents.

Address, MISS C. L. WERNER, 329 Fifth Avenue, New York.

A COURSE OF LECTURES FOR $1.75.

A Notable Gathering of the world's leaders comes before the readers of THE YOUTH'S COMPANION during the year 1890. It is like a great Lecture Course of 52 weeks, with over 100 lecturers, each a famous authority in some branch of Art, Literature, State-craft, Science or Education. And these lectures cost only 3½ cents each, on the basis of a year's subscription, or 52 numbers for only $1.75.

430,000 families attend this great lecture course. You can attend it by reading THE YOUTH'S COMPANION each week. It will be sent you regularly until January 1, 1891, at a cost of only $1.75. Send for *Illustrated Prospectus of the entire series to* THE YOUTH'S COMPANION, Boston, Mass.

KINDERGARTEN AND SCHOOL SUPPLIES

J. W. Schermerhorn & Co.
3 EAST 14TH ST.,
NEW YORK.

GUSTAV E. STECHERT,

—IMPORTER OF—

Foreign Books and Periodicals,

828 BROADWAY, NEW YORK.

Catalogues of Second-hand Books will be sent gratis on application.

English, French and German Monthly Bulletins of New Books,

BRANCHES: {Leipzig, Hospital Strasse 10.
{London, 26 King William St., Strand, W. C.

RING BOARD

(Patented, November 1889.)

FOR TEACHING

Color, Number, Form, Position and Direction

Price with one gross of rings, $5.00.

For full information, apply to

PROF. A. L. FAIRFIELD,
9 University Place, N. Y.

The Prang Course of Instruction in Form and Drawing.

This course is the outgrowth of fifteen years' experience devoted to the development of this single Subject in public education, under the widest and most varied conditions.

It differs widely from all the so-called "Systems of Drawing" before the public.

The aim or object of the instruction is different.

The Methods of teaching and the Work of pupils are different.

The Models, Text-books, and materials are on an entirely different Educational plan.

The results in Schools are widely and radically different.

It is the only Course based on the Study of Models and Objects by each pupil.

The Course prepares directly for MANUAL TRAINING. Many of the exercises are in themselves elementary exercises in MANUAL TRAINING.

THE PRANG COURSE has a much wider adoption in the best schools of the country than all the "Systems of Drawing" put together. It has the endorsement of the leading educators of the country.

More than *two millions* of children in public schools are being taught FORM AND DRAWING by THE PRANG COURSE.

PRANG'S NORMAL DRAWING CLASSES.

These classes have been established for giving the very best kind of instruction in Drawing through home study and by correspondence. All teachers can, through these classes, prepare themselves to teach Drawing in their schools.

☞Send for Circulars in regard to PRANG'S COURSE OF INSTRUCTION IN FORM STUDY AND DRAWING, and also in regard to PRANG'S NORMAL DRAWING CLASSES. Address,

THE PRANG EDUCATIONAL COMPANY,

BOSTON.

EDUCATIONAL MONOGRAPHS

PUBLISHED BY THE

NEW YORK COLLEGE FOR THE TRAINING OF TEACHERS

NICHOLAS MURRAY BUTLER, EDITOR

VOL. III. No. 1. { Entered at the Post Office at New York City as second class matter. } WHOLE No. 13.

MANUAL TRAINING

IN THE

PUBLIC SCHOOLS

BY

CHARLES R. RICHARDS

Director of Mechanic Arts Dep't, Pratt Institute, Brooklyn,

AND

HENRY P. O'NEIL

Principal of Grammar School No. 1, New York City.

JANUARY, 1890

NEW YORK: 9 UNIVERSITY PLACE

LONDON: THOMAS LAURIE, 28 PATERNOSTER ROW

ISSUED BI-MONTHLY] [$1.00 PER ANNUM

"These publications are doing an admirable work."—G. Stanley Hall.

EDUCATIONAL MONOGRAPHS

Published under the auspices of the NEW YORK COLLEGE FOR THE TRAINING OF TEACHERS, and written by the foremost Educators and Public School Workers both in this country and abroad, furnish a series of papers to teachers on the Educational Questions of the Day. The papers are concise, clear and comprehensive, especial prominence being given to the Manual Training Movement.

Six Monographs appear each year, and the subscription price is fixed at the extremely low price of $1.00 per annum.

The following have already appeared:

I. A Plea for the Training of the Hand, by D. C. Gilman, LL.D., President of Johns Hopkins University.—Manual Training and the Public School, by H. H. Belfield, Ph.D., Director of the Chicago Manual Training School. 24 pp.

"For the student or teacher who is making a study of manual training this first number of the Educational Monograph Series is the best possible introduction to the subject."—*Science.*

II. Education in Bavaria, by Sir Philip Magnus, Director of the City and Guilds of London Institute.

III. Physical and Industrial Training of Criminals, by Dr. H. D. Wey, of State Reformatory, Elmira, N. Y.

IV. Mark Hopkins, Teacher, by Prof. Leverett W. Spring, of Williams College.

V. Historical Aspects of Education, by Oscar Browning, M. A., of King's College, Cambridge.

VI. The Slojd in the Service of the School, by Dr. Otto Salomon, Director of the Normal School at Nääs, Sweden.

VII. VIII. Manual Training in Elementary Schools for Boys, by Prof. A. Sluys, of the Normal School, Brussels.

IX. The Training of Teachers in Austria, by Dr. E. Hannak, Director of the *Pädagogium* at Vienna.

X. Domestic Economy in Public Education, by Mrs. Ellen H. Richards, of Mass. Institute of Technology.

XI. Form Study and Drawing in the Common Schools, by the late John H. French, Ph.D., Director of Drawing, New York State.

"This Monograph will do much good. It is an exceedingly valuable aid to teachers."—W. S. Goodnough, Superintendent of Drawing, Columbus, O.

XII. Graphic Methods in Teaching, by Charles Barnard.

XIII. Manual Training in the Public Schools, by Charles R. Richards and Henry P. O'Neil.

The following are in preparation:

Manual Training in France, by A. Salicis, Inspector of Manual Training.

Hand-Craft, by J. Crichton-Browne, M.D., F.R.S.

The John F Slater Fund, by Atticus Haygood, D.D., Special Agent.

The American High School, by Ray Greene Huling, of New Bedford, Mass.

The Teaching of History, by Dr. Edward Channing, of Harvard University.

Objections to Manual Training, by Col. Francis W. Parker, of Cook Co. (Ill.), Normal School.

The Jewish Theory of Education, by Prof. Henry M. Leipziger, Director of the Hebrew Technical Institute.

"The ideal and the possible are drawn nearer together in these helpful pamphlets than many people would venture to hope. The teacher who desires to be really progressive cannot afford to do without this series of masterly tracts."—*The American Hebrew.*

For Monographs, Leaflets or Circulars of Information, address, enclosing postal note or money order payable to the New York College for the Training of Teachers. One and two-cent stamps may also be sent.

Registrar of the College for the Training of Teachers,

9 University Place, New York City.

HAMMACHER, SCHLEMMER & CO.

Cabinet and Piano Hardware,

209 BOWERY, - - - NEW YORK.

THE LARGEST ASSORTMENT of

FINE MECHANICS' TOOLS

in this country.

TOOL CATALOGUE, nearly 200 pages, will be sent prepaid on application.

ART TRAINING

IN

MANUAL TRAINING, NORMAL AND OTHER SCHOOLS.

Hennecke's Educational Casts will compare most favorably with those exhibited by any other house in the world. A price list will be mailed to all applicants; it contains an index which classifies and describes **1068** subjects. An illustrated supplement, including the Chicago Manual Training School Collection, is nearly ready.

Complete assortment may be seen at our stores.

C. HENNECKE COMPANY,

CHICAGO
207 Wabash Ave.

MILWAUKEE,
79-83 Buffalo St

APPLICATIONS FOR ASSISTANCE

FROM THE SCHOLARSHIP FUND ON THE PART OF CANDIDATES INTENDING TO ENTER THE . . . . . .

NEW YORK

College for the Training of Teachers

IN SEPTEMBER, 1890,

SHOULD BE FORWARDED WITH TESTIMONIALS AS EARLY AS POSSIBLE TO . . . . .

WALTER L. HERVEY, Dean,

9 UNIVERSITY PLACE, N. Y.

Indigestion

HORSFORD'S ACID PHOSPHATE.

Prepared under the direction of Prof. E. N. HORSFORD.

This preparation promotes digestion without injury, and is pleasant to the taste.

It consists of phosphoric acid combined with the phosphates, forming an important and active principle and essential element of the gastric juice of the stomach. This fluid is necessary to a perfect digestion, and if the stomach is not supplied with it, indigestion will result.

Dr. E. V. WRIGHT, Saratoga Springs, N. Y., says:
"The peculiar combination of phosphates renders it most valuable in the treatment of digestive disorders."

Dr. E. J. WILLIAMSON, St. Louis, Mo., says:
"Marked beneficial results in imperfect digestion."

Dr. F. G. MCGAVOCK, McGavock, Ark., says:
"It acts beneficially in obstinate indigestion."

Dr. W. W. SCOFIELD, Dalton, Mass., says:
"It promotes digestion, and overcomes acid stomach."

Descriptive pamphlet sent free on application to

Rumford Chemical Works, Providence, R. I.

BEWARE OF SUBSTITUTES AND IMITATIONS.

CAUTION.—Be sure the word "HORSFORD'S" is printed on the label.

All others are spurious. Never sold in bulk.

LIBRARY OF CONGRESS
0 019 744 295 5